

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SAN DIEGO REGION

REPORT FOR

**TENTATIVE RESOLUTION NO. R9-2004-0013**

RECOMMENDATION TO THE  
STATE WATER RESOURCES CONTROL BOARD  
FOR THE ADOPTION OF AN EXCEPTION TO THE CALIFORNIA  
OCEAN PLAN  
FOR  
THE UNIVERSITY OF CALIFORNIA  
SCRIPPS INSTITUTION OF OCEANOGRAPHY, LA JOLLA

**Date:** March 12, 2004

**To:** John H. Robertus  
Executive Officer

**From:** Sabine A. Knedlik  
Water Resource Control Engineer  
Industrial Compliance Unit

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## **A. SUMMARY**

On November 22, 2002, the University of California, Scripps Institution of Oceanography (Scripps), submitted an application in request for an exception to the 2001 California Ocean Plan (Ocean Plan). The Ocean Plan states that waste shall not be discharged to areas designated as being of special biological significance (ASBS). Scripps wastewater discharge is currently regulated under Order No. 99-83, NPDES Permit No. CA0107239.

*Section III.I.1* of the Ocean Plan states that the State Board may, in compliance with the California Environmental Quality Act, subsequent to a public hearing, and with the concurrence of the U.S. Environmental Protection Agency, grant exceptions to the Ocean Plan if the Board determines that (a) the exception will not compromise protection of ocean waters for beneficial uses, and (b) the public interest will be served.

Scripps' application and additional information was reviewed by State Board and Regional Board and found to be complete on November 26, 2003. The data and information submitted by Scripps to be considered for the exception is sufficient for State Board to determine if the exception will not compromise protection of ocean waters for beneficial uses and if the public interest will be served. State Board intends to consider adoption of the exception to the Ocean Plan Prohibition, *Section III.H.2*, at its May 20, 2004 meeting.

A Resolution from the Regional Board recommending approval of the Ocean Plan exception is the appropriate way to inform the State Board.

## **B. BACKGROUND**

On March 21, 1974, the State Board, in Resolution No. 74-28, designated 31 "Areas of Special Biological Significance" in ocean waters along the California coastline, including the *San Diego Marine Life Refuge* and the *San Diego La Jolla Ecological Reserve*. The State Board adopted the 2001 California Ocean Plan (Ocean Plan) on November 16, 2000. The Ocean Plan prohibits waste being discharged to ocean waters that are designated ASBS.

The *San Diego Marine Life Refuge* and the *San Diego La Jolla Ecological Reserve* are contiguous Pacific Ocean areas adjoining the La Jolla neighborhood of the City of San Diego. The combined area of these two contiguous ASBSs is approximately 541 acres. The *San Diego Marine Life Refuge* is approximately 88 acres and has about 0.6 miles of coastline. The *San Diego La Jolla Ecological Reserve* is approximately 453 acres and has about 1.7 miles of coastline.

There are 92 identified waste discharge points (including storm drain outlets from residential, commercial, municipal, and industrial areas, as well as non-point and point source discharges) into the *San Diego Marine Life Refuge* and 184 identified waste discharge points into the *San Diego La Jolla Ecological Reserve*. The University of California, Scripps Institution of Oceanography (Scripps) discharges wastewater into the *San Diego Marine Life Refuge*, and is currently the only regulated point source discharge into an ASBS in Region 9.

Scripps is regulated under an NPDES permit to discharge seawater that has been circulated through various aquariums (Stephen Birch Aquarium as well as the institutions' laboratory aquaria). At times, the wastewater commingles with storm water and urban runoff.

Scripps' first NPDES permit was Order No. 74-47, issued by the San Diego Regional Board on September 16, 1974. Finding No. 5 of the Order stated that the State Board designated the *La Jolla Ecological Reserve* as an ASBS and that discharges into ASBSs are prohibited if the natural water quality conditions could be altered by the discharge. It was incorrectly identified at the time that the discharge entered the *La Jolla San Diego Ecological Reserve*. The actual discharge flows into the *San Diego Marine Life Refuge*. The Regional Board made the finding that the discharge would not alter the natural water quality conditions.

The permit was re-issued in 1979, 1984, and 1994. The most recent permit, issued in 1999, is Order No. 99-83, NPDES Permit No. CA0107239. The discharge is currently not in compliance with the 2001 California Ocean Plan since no exception from the State Board has yet been granted for the discharge to the *San Diego Marine Life Refuge*.

*Section III.I.1* of the Ocean Plan states that the State Board may, in compliance with the California Environmental Quality Act, subsequent to a public hearing, and with the concurrence of the Environmental Protection Agency, grant exceptions to the Ocean Plan if the Board determines that (a) the exception will not compromise protection of ocean waters for beneficial uses, and (b) the public interest will be served.

According to the Public Resources Code, Section 36750, as of January 1, 2003 all designated ASBS are also State Water Quality Protection Areas (SWQPA).

### **C. FACILITY DISCHARGE HISTORY**

Scripps has been discharging wastewater into the ocean in the vicinity of its pier at since 1910. The first Waste Discharge Requirements were issued by the Regional Board on September 30, 1969 (Order 69-R24). The current seawater intake system has a capacity to pump approximately 1 million gallons per day of seawater from the seaward end of the Scripps Pier. The water is filtered through two sand filters before it is pumped to two storage tanks. The water is pumped to several of Scripps' research laboratories and aquariums.

Scripps discharges wastewater through five outfalls, outfall 1, 2, 3, 4A, and 4B.

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|------------|---|
| Outfall 1: | Discharges approximately 450,000 gallons per day of wastewater that has been circulated through the Stephen Birch Aquarium, National Marine Fisheries Aquarium, Hydraulic Laboratory, and the Marine Biology Aquaria. |
| Outfall 2: | Discharges approximately 2,000 gallons per day of wastewater from Scholander Hall aquaria.  |

Outfall 3: Discharges approximately 210,000 gallons per day of wastewater from the Experimental Aquarium.

Outfall 4A and 4B: Discharges approximately 50,000 gallons per day of wastewater. Outfall 4A discharges intake water and settling tank overflow while Outfall 4B discharges sand filter backwash water.

The wastewater from all outfalls is discharged onto the beach where it flows across the beach and into the *San Diego Marine Life Refuge*. Order No. 99-83 establishes an initial dilution ratio of 2:1 for the Scripps wastewater discharges into the surf zone. On June 17, 2003 receiving water samples were taken ¼ mile offshore from Scripps seawater intake. The samples were analyzed for copper and resulted in an average copper background concentration of 2 µg/L. The result coincides with the background copper seawater concentration stated in the Ocean Plan to calculate effluent limitations.

The wastewater from the aquariums has contained measurable concentrations of copper, which is derived from copper sulfate used as a treatment for disease control in the aquaria. Between 1994-1998, measurements of copper in the wastewater from Outfall 1 ranged from a high of 31 µg/L to below a detection limit of 10 µg/L. Copper is known to be toxic to marine life. In an unpublished analysis of this data, taking into account the non-detects, Saiz (2001) determined that the lognormal mean copper concentration in the wastewater was 15.2 µg/L and the mean was 16.6 µg/L. Those copper concentrations, at times, have resulted in excursion above the Ocean Plan's receiving water quality objectives.

Since that time, and in its review of practices while requesting this exception, Scripps is expecting to have a maximum copper concentration of less than 11 µg/L (daily maximum). The Stephen Birch Aquarium uses a variety of other additives that are eventually discharged. On September 23, 2003 a sample representative of daily maximum concentrations of these additives, including copper at a concentration of approximately 10 µg/L, was analyzed for toxicity. The sample was not acutely toxic and the chronic toxicity NOEC (no observed effect concentration) was 100% for three different species.

Storm water and non-storm water runoff have been, and continue to be, co-mingled with wastewater. Non-storm water runoff may be toxic to marine life. Collected storm water runoff at the facility ranged from 22 to 360 µg/L for copper and from non-detect to 9 mg/L for oil and grease.

The shoreline at the *San Diego Marine Life Refuge*, as well as in the contiguous *San Diego La Jolla Ecological Reserve*, was found to exceed water quality standards for bacterial indicators due to non-point and point sources (SWRCB 2003 303d List, Resolution 2003-0009). It is likely that storm drains in these two SWQPAs are discharging pollutants that cause elevated levels of bacteria.

#### **D. ENVIRONMENTAL IMPACTS**

In 2003, AMEC Earth and Environmental, Inc. performed a marine biological survey in the vicinity of the Scripps discharges. The report stated that the survey could not and was not designed to determine any causal effect from the discharge, but to characterize the respective areas within a specific period of time. The report stated that many of the species that occur in the sandy intertidal and subtidal habitats have a high emigration and immigration rate, which contributes to the large amount of temporal and spatial irregularity. Given the results of the survey and taking into consideration the variability of the habitat, there appears to be no affect on marine biological resources in the vicinity of the Scripps wastewater discharges.

Based on this information, it is assumed that the Scripps discharge is not causing a reduction of marine life. The available data does not support making a definitive statement that there are no water quality impacts from the Scripps discharge, since the reference stations used in the report were also under the influence of urban runoff.

#### **E. ALTERNATIVES TO THE EXCEPTION**

If the State Board does not issue an exception to the Ocean Plan prohibition, Scripps is required to terminate the discharge of wastewater to the *San Diego Marine Life Refuge*.

#### **F. ENVIRONMENTAL BENEFITS**

Scripps Institute of Oceanography is a major marine science institution, providing education to oceanography students and opportunities and facilities for cutting edge oceanographic research, including research performed by or for government agencies. Much of the research and education performed at Scripps utilizes and is dependant on the flow-through seawater system. In addition, the Stephen Birch Aquarium is an important venue for public education regarding marine biology and conservation. The Aquarium also depends on the use of the flow-through seawater system. While Scripps' seawater system does discharge wastewater into the *San Diego Marine Life Refuge*, the quality of that discharge may be controlled through the application of management practices and specific controls. It is in the publics' best interest, especially with regard to marine environmental conservation and protection, to allow Scripps to continue to discharge within the confines of these specific conditions.

#### **G. RECOMMENDATION**

It is recommended that the Regional Board adopt tentative Resolution No. R9-2004-0013. State Board's granting of an exception from the discharge prohibition to SWQPA in the Ocean Plan will not compromise the protection of ocean waters for beneficial uses and the public interest will be served.

The State Board's approval of the Ocean Plan exception request will allow Scripps to continue its wastewater discharge into the *San Diego Marine Life Refuge*.